# FREQUENCY TO NON-COMPLIANCE TO ORAL IRON THERAPY IN PREGNANCY AND COMMON FACTORS LEADING TO IT

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***ABSTRACT:***

***OBJECTIVES:***

*The objective of this study was to determine frequency of non-compliance to oral iron therapy in pregnancy and common factors leading to it.*

***METHODOLOGY:***

*It was a cross-sectional study done in the Department of Obstetrics and Gynecology of Lady Willington Hospital Lahore, Pakistan. The duration of this study was six months i.e., 3rd October 2019 to 2nd March 2020. All antenatal patients between ages of 18 to 45 years presented in the obstetrics outdoors or admitted in the ward were included in this study. A total of 245 patients were included in this study by consecutive non-probability sampling. Patients with gynecological problems, patients dependent on others for their medication cost, patients with psychiatric illness or physical disability were excluded. Post stratification Chi-square test was applied keeping P-value ≤0.05 as significant*

***RESULTS:***

*Among 245 patients, mean age was 27±2.16 years. Iron supplement used by 245 patients was analyzed as 159 (65%) patients had used the iron supplement while 86 (35%) patients didn't use iron supplements (P-value 0.001). Iron supplement used by 245 patients was analyzed and only 93 (38%) patients had used the iron supplement while 152 (62%) patients didn't use iron supplements.*

***CONCLUSION:***

*The coverage of antenatal iron and folic acid supplements is very low in the surveyed districts of Pakistan due to lack of parental education and older aged women belonging to poor households.*

***KEYWORDS:*** *Non-compliance, Oral iron, Pregnancy, Gynecology, Neonate, Mother*

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## INTRODUCTION:

Anemia is a medical condition in which the carrying capacity of red blood cells for oxygen becomes inadequate to fulfill the physiological requirements of the body. It may cause very severe health problems during pregnancy and may have severe side effects on both maternal and fetal outcomes. The World Health Organization defines anemia as the concentration of hemoglobin <11g/dl or hematocrit <37% during pregnancy[1]. All over the world, 42% of females of reproductive age have anemia and about 50% of these females have

anemia because of deficiency of iron content in blood[3]. In Pakistan, it has been estimated that anemia in pregnancy is observed in 51% pregnant females. In Pakistan oral iron supplements are distributed by Maternal and Child Health (MCH) services through primary health care facilities including lady health workers. One of the main reasons for iron supplements programs failure is non-compliance[2]. In Pakistan, it has been estimated that anemia in pregnancy is observed in 51% pregnant females. Maternal anemia is significantly associated with high maternal mortality rate and poor obstetric outcomes[9]. A trial in China showed 47% reduction in neonatal mortality when pregnant women were given antenatal oral iron folic acid supplements[4]. The World Health Organization recommends daily prophylactic doses of oral iron supplements especially in prevalent areas[23]. The World Health Organization defines non-compliance as the degree to which a person‟s behavior to take the medicines, following the diet or accomplishing the changes in lifestyle, matches with the agreed recommendation from the health care provider. Several factors play significant roles in whether the person fulfills their treatment and pregnancy offers the exclusive encounter as non-compliance can pose many serious health issues, not only to the mother but also the fetus[15]. The overall non-compliance rate in pregnancy is predicted as 43% in Pakistan. In comparison to other countries, the rate of non-compliance to iron folic acid supplements is found lowest in Pakistan (40%)[11]. In one study conducted in Nigeria compliance for oral iron was found to be 65.9%[22]. In a study in Peru compliance was found to be 79%. In south India compliance for iron folic acid was reported to be 64.7%. Common factors leading to non-compliance to oral iron therapy include illiteracy (70.3%), living in rural areas (64.3%), maternal age of 45 years and above (81.4%), lowest socio-economic status (74.7%) and poor health education (73.2%)[8]. As most of the studies are from developed countries and limited data exists regarding factors leading to non-compliance to oral iron therapy in Pakistan, it is obvious that there is a lot of social difference including literacy rate, economic, cultural and environmental differences between developed countries and our region. Hence, we expect that the factors affecting compliance to oral iron therapy may be different in our community than the developed countries. Therefore, we designed this study to identify the factors responsible for non-compliance to oral iron therapy in antenatal patients in our community.

## METHODOLOGY:

It was an observational cross-sectional study conducted in the Obstetrics and Gynecology Department of Lady Willington Hospital Lahore, which is the teaching hospital of King Edward Medical University Lahore Pakistan. The duration of the study was six months i.e., 3rd October 2019 to 2nd March 2020. A total of 245 patients were included in this study using 64.3% proportion of common factors leading to non-compliance to oral iron therapy in pregnancy, 95% confidence level, 6% margin of error with the help of WHO software[7]. Inclusion criteria included all consecutive pregnant female patients between the ages of 18 to 45 years presented to obstetrics outdoors or already admitted in gynae ward and labor room. Exclusion criteria include patients with other gynecological problems, patients dependent on others for their medication cost, patients with psychiatric illness or physical disability and those patients who were prescribed injectable iron supplements by a qualified medical specialist. Informed verbal consent was taken after explaining to the patients the purpose and benefits of the study and with the permission that the study was only for data review and publication. All the information taken from the patient was recorded on a pre-designed proforma on the spot. Data was analyzed by SPSS version 26. Mean±SD was calculated for numerical variables like age, gravid, para and duration since live birth. Frequency in percentage was calculated for categorical variables like iron supplements used, period of gestation and common factors (affordability, health literacy, resident). Common factors were stratified among age, period of gestation and iron supplements used. Post stratification Chi-square test was applied keeping P-value ≤0.05 as significant. All the results were presented in the form of tables.

## RESULTS:

Among 245 patients the mean age was 27±2.16 years. The age groups of patients, literacy level, gravid status, parity status and interpregnancy interval are described in Table 1. Duration since live birth 245 patients was analyzed as 172 (70%) patients have their last delivery ≤3 years while 73 (30%) patients have their last delivery >3 years. Mean duration was 3±1.77 years (Table 1). Iron supplement used by 245 patients was analyzed and only 93 (38%) patients had used the iron supplement while 152 (62%) patients didn't use iron supplements. Non-affordability, knowledge of tablets prescribed, period of gestation and

compliance to oral iron therapy during pregnancy is mentioned in Table 2.

**Table 1: Characteristics of Patients**

| Age Groups | Frequency | Percentage |
|---|---|---|
| 18-25 Years | 81 | 33% |
| 26-35 Years | 103 | 42% |
| 36-45 Years | 61 | 25% |
| Educated | 54 | 22% |
| Uneducated | 191 | 78% |
| Primary Gravida | 78 | 32% |
| Multigravida | 167 | 68% |
| Primipara | 93 | 38% |
| Multipara | 152 | 62% |
| Interpregnancy Interval | | |
| ≤3 Years | 172 | 70% |
| >3 Years | 73 | 30% |

Primary Gravida=pregnant for 1st time (fetus alive or dead) or delivered single alive baby in the past, Multigravida=pregnant for more than 1 time in the past (fetus alive or dead). Primary Parous=female who delivered 1 alive baby, Multiparous=female who delivered more than 1 alive babies.

**Table 2: Factors Affecting Non-Compliance**

| | | Frequency | Percentage | P-Value |
|---|---|---|---|---|
| Non-Affordability | Yes | 159 | 65% | 0.015 |
| | No | 86 | 35% | |
| Knowledge About Oral Iron Supplements | Yes | 37 | 15% | 0.001 |
| | No | 208 | 85% | |
| Period of Gestation | 1st Trimester | 56 | 23% | 0.08 |
| | 2nd Trimester | 76 | 31% | |
| | 3rd Trimester | 113 | 46% | |
| Complaint to Therapy | Yes | 93 | 38% | 0.001 |
| | No | 152 | 62% | |

## DISCUSSION :

In this study the compliance to use antenatal iron and folic acid supplements was low with only 38% (n=93) of women reported consumption of antenatal iron and folic acid supplements during their pregnancy. In our study only 22% (n=54) of females were literate. In a study done in Vietnam it was estimated that a total of 73% of literate women reported high compliance when compared with women who were not literate who showed a 50% of compliance[18]. Almost similar results are stated in a study done in Toronto which shows compliance is better in educated pregnant females as compared to uneducated pregnant females[12]. This shows that educated pregnant females responded well to iron and folic acid supplements as compared to uneducated ones. In our study, a substantial majority of women 46% initiated the supplements in their third trimester of pregnancy, with an average initiation in the fifth month of pregnancy. A study done by Larson et al showed almost similar results that pregnant females get more attention from doctors in their third trimester[14]. Many factors are responsible for this attitude. As the size of the uterus grows more in the third trimester and the growth needs of the baby increase rapidly, it takes more nutrition from the mother and hence weakness, fatigue is more prominent in the third trimester[16]. Only 15% of patients in our study had the knowledge of prescribed tablets while 85% of patients had no knowledge of prescribed tablets. This is because of the low education level of females in rural areas of Pakistan. In a study done in India, the socioeconomic status of Asian women living in rural areas is very poor and the majority of them are uneducated. The only health care service they have is a small dispensary that is run by a non-doctor paramedic. In a study done by Thomas et Al, the miscarriage rate is about 14% in rural areas of south Punjab of Pakistan where major health services are not available[20]. According to a Pakistan demographic and health survey done in 2012-2013, only 45% of pregnant women consumed antenatal

iron folic acid supplements during their pregnancy, which is further lowered to 39% in rural areas. This level is highest in Islamabad and lowest in Balochistan province. In comparison to other countries the usage of iron folic acid supplements is lowest in Pakistan that is 40% while non-compliance to take iron and folic acid supplements is reported to be 58%. Common factors leading to non-compliance to oral iron therapy are illiteracy (70.3%), living in rural areas (64.3%), maternal age 45 and above (81.4%), belonging to lowest socio-economic status (74.7%), poor health literacy (73.2%)[13]. The results of our study showed that illiterate females had higher chances of non-compliance to iron and folic acid supplements during the pregnancy. The results are consistent with previous surveys conducted in South Asia or in other continents, which testified a significant association between low education statuses. This is because educated females have more access to the information regarding health during pregnancy, which improves their apprehension about their pregnancy and health of their neonate and also the utilization of antenatal care services, as compared to the illiterate females[19]. In our study, females aged 45 years or more are also recognized as an independent risk factor for non-compliance to antenatal iron and folic acid supplementation. Surveys conducted in Pakistan, India, Nepal and Bangladesh have also found similar results with higher rates of older aged females not taking antenatal iron and folic acid supplementation as compared to younger females[6]. Many surveys observed young age females as the risk factor for non-compliance of antenatal iron and folic acid supplementation. In developing countries, females of old age have more knowledge of pregnancy and child-birth and usually they do not feel the iron and folic acid supplements needed in pregnancy as they did not take these in previous pregnancies[17]. In contrast to that, one study found that the high sociodemographic status could be a risk factor for non-compliance of iron and folic acid supplementation in pregnancy. In developing countries, females belonging to poor socio demographic status normally don‟t use antenatal care services because of their restricted resources[5]. In Pakistan, the rate of utilization of antenatal care from health care professionals is 73% in pregnant females, which could lead to less access to the antenatal iron and folic acid supplements[10]. Another study showed that in developing countries, limited access of pregnant females to antenatal care is the major cause for non-compliance to the iron and folic acid supplements and because of this reason, World Health Organization focused on antenatal care which is composed of four visits in pregnancy instead of previous schedules of visits in every month and to dispense of iron and folic supplements to all pregnant females at each visit[21].

**LIMITATIONS:**

There are certain limitations to the study as well. The sample size of the study is very small and studies with large sample sizes are needed to extract more information regarding the real nature of the problem in Pakistan. Also, it is a single center study. More studies in high volume centers are needed.

**CONCLUSION:**

The compliance of antenatal iron and folic acid supplements by pregnant females is very low in the surveyed districts of Pakistan and this is due to the lack of parental education, old aged women belonging to poor socioeconomic status and lack of antenatal care services. All these factors were significantly associated with non-use of these supplements. The results of this study highlighted the serious need to improve the efforts, which will target the pregnant ladies by successful coverage of antenatal care to increase the use of iron and folic acid supplements during pregnancy in Pakistan.

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